**Freezer**
Storage of premixed resin or pre-preg material at -19 °C

**Airbench**
Possibility of an additional dust extraction if needed for a specific activity inside the cleanroom

**Plycutter**

**Materials analyzing Equipment**
Analysis of small composite samples.

- **DSC:** To check the degree of cure.
- **TGA:** Measures changing mass over time. Check how a material decomposes under certain temperatures/pressures.
- **DMA:** Characterizing mechanical properties (stiffness, strength, E-modulus ..)
- **DEA:** For investigation of the curing behavior of thermosetting resin systems, composite materials, adhesives and paints

  Manufacturer: Netzsch

**Composite Machine Tool**
5 Axis CNC controlled machining tool for composite parts

- **Working envelope:** 4000 x 2500 x 1000 mm
- **Max. weight on table:** 2000 kg
- **Positioning accuracy:** 30 microns
- **Repeatability accuracy:** 25 microns
- **Spindle speed:** 20,000 rpm
- **Manufacturer:** Breton S.p.a. (Italy)

**Autoclave**
Pressure chamber for curing composite parts at elevated temperature

- **Working Dimensions:** 985 mm x 2000 mm
- **Working Pressure:** 6.5 bar
- **Design Temperature:** 250 °C
- **Max. Pressurisation Rate:** 0.5 bar/min
- **Max. Heating Rate:** 3 °C/min
- **Individual Vacuum Zones:** 5
Curing Oven
For heat treatment or out of autoclave curing of composite parts.

Design Temperature: 300 °C
Max. Heating Rate: 5 °C/min
Working Dimensions: 2000 mm x 2000 mm x 2000 mm

RTM Press
Electrically heated pneumatic press for RTM manufacturing of composite parts. Resin injection and curing of the composite part at temperature and pressure is done without opening the mould (Out of Autoclave process).

Clamping Area: 2400 mm x 1000 mm
Daylight adjustment: 25 mm – 300 mm (height of tool)
Max. tool weight: 2000 kg
Max. clamping pressure: 14 bar
Max. clamping force: 268 t
Design Temperature: 200 °C
Heating capacity: 128 kW
Max. Heating Rate: 5 °C/min
Separate chiller for active insulation between the upper platen and the electronics

RTM Panel
Mechanically clamped test panel mould with RTM capability. Used for investigating resin flow characteristics and material properties of composite specimens.

Mould dimensions: 500 mm x 500 mm
Max. pressure: 4 bar
Electrical heating
Screw adjustable cavity thickness
Toughened glass upper mould reinforced with steel supporting framework

Manufacturer: Composite Integration (UK)
Platen Press
High temperature hydraulic press for manufacturing of composite parts. Curing of the part at temperature and pressure is done without opening the tool (Out of Autoclave process).

- **Clamping Area:** 1500 mm x 1000 mm
- **Max. daylight:** 640 mm (height of tool)
- **Max. tool weight:** 3800 kg lower platen, 1000 kg upper platen
- **Max. clamping pressure:** 20 bar
- **Design Temperature:** 390°C (oil heating)
- **Max. Heating Rate:** 6°C/min
- **Max. Cooling Rate:** 6°C/min
- **Manufacturer:** Pinette Emidecau Industries (France)